

Applied Physics Letters
A weekly journal featuring concise, up-to-date reports on significant new findings in applied physics.
[\[APL Home\]](#) [\[All Online Issues: Browse | Search\]](#) [\[Article Purchases\]](#)
[\[SPIN Database: Browse | Search\]](#) [\[Forthcoming Abstracts\]](#) [\[HELP\]](#) [\[EXIT\]](#)

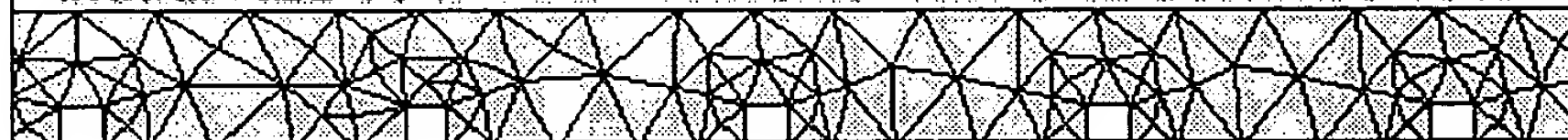
[online advertising info](#)

Article Collection:

[View Collection](#) | [Help](#)

(Click on the ☐ to add an article.)

Model ALL Your PDE Problems with ONE Software Tool!



[Show References](#)

[[Previous](#) / [Next](#) Abstract | [Issue Table of Contents](#) | [Bottom of Page](#)]

Applied Physics Letters -- May 9, 1994 -- Volume 64, Issue 19, pp. 2557-2559

☐ **Full Text:** [[PDF \(331 kB\)](#) [GZipped PS](#)] [Order](#)

Nonalloyed ohmic contacts on GaN using InN/GaN short-period superlattices

M. E. Lin, F. Y. Huang, and H. Morkoç

*Materials Research Laboratory and Coordinated Science Laboratory, University of Illinois at Urbana-Champaign,
104 S. Goodwin Avenue, Urbana, Illinois 61801*

(Received 29 November 1993; accepted 17 February 1994)


It is well known that ohmic contacts on GaN, a highly promising material for electronic and optoelectronic devices with a wide band gap of about 3.4 eV, constitute a major obstacle to further development of devices based on this material. We demonstrated a novel scheme of nonalloyed ohmic contacts on GaN using a short-period superlattice (SPS), composed of GaN and narrow band-gap InN, sandwiched between the GaN channel and an InN cap layer. Comparison with a similar layer without the SPS structure indicates that quantum tunneling through the SPS conduction band effectively reduces the potential barrier formed by the InN/GaN heterostructure leading to low contact resistivities. From the transmission-line-method measurements, specific contact resistances as low as $6 \times 10^{-5} \Omega \text{ cm}^2$ with GaN doped at about $5 \times 10^{18} \text{ cm}^{-3}$ have been obtained without any post-annealing. Theoretical estimation based on the SPS tunneling model is consistent with the experiment. Applied Physics Letters is copyrighted by The American Institute of Physics.

doi:10.1063/1.111573

PACS: 73.40.Cg, 73.61.Ey

[Additional Information](#)

☐ Full Text: [[PDF \(331 kB\)](#) [GZipped PS](#)] [Order](#)

 The [American Institute of Physics](#) is a member of [CrossRef](#).

[[Previous](#) / [Next](#) Abstract | [Issue Table of Contents](#) | [Top of Page](#)]

[Show References](#)

Article Collection: [View Collection](#) [Help](#) (Click on the ☐ to add an article.)

[APL Home] [All Online Issues: Browse Search] [SPIN Database: Browse Search] [HELP] [EXIT]



Published by the [American Institute of Physics](#)
Copyright © 2002 American Institute of Physics